

WHAT IS CLAIMED IS:

Sub A 1. A camera control apparatus for controlling shooting direction and zoom magnification of a camera, comprising:

5 input means for inputting a control command for controlling shooting direction or zoom magnification of the camera;

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10 calculation means for calculating, on the basis of the control command input by said input means, an area to be imaged by the camera;

15 limiting means for limiting a control range of the zoom magnification of the camera in a case where the imaging area of the camera calculated by said calculation means overlaps a prescribed area; and

20 control means for controlling the zoom magnification of the camera so as to fall within the control range, which has been limited by said limiting means, in a case where the zoom magnification of the camera exceeds the control range limited by said limiting means.

2. The apparatus according to claim 1, further comprising storage means for storing limit information concerning the control range of the zoom magnification of the camera corresponding to the prescribed area.

25 3. The apparatus according to claim 1, wherein said limiting means limits an upper limit of the zoom

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magnification of the camera in such a manner that the upper limit of the zoom magnification of the camera will be lower than in a case where the imaging area of the camera does not overlap the prescribed area.

5 4. The apparatus according to claim 3, wherein said control means controls the zoom magnification of the camera to the upper limit of the control range, which has been limited by said limiting means, in a case where the zoom magnification of the camera has exceeded the
10 upper limit of the control range limited by said limiting means.

5. A camera control system for controlling shooting direction and zoom magnification of a camera from an operation terminal via a network, wherein said operation
15 terminal comprises:

input means for inputting a control command for controlling shooting direction or zoom magnification of the camera, and

20 output means for outputting the control command, which has been input by said input means, to a camera control apparatus that controls the camera; and

said camera control apparatus comprises:

25 calculation means for calculating, on the basis of the control command output by the operation terminal, an area to be imaged by the camera;

limiting means for limiting a control range of the

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zoom magnification of the camera in a case where the imaging area of the camera calculated by said calculation means overlaps a prescribed area; and

control means for controlling the zoom

5 magnification of the camera so as to fall within the control range, which has been limited by said limiting means, in a case where the zoom magnification of the camera exceeds the control range limited by said limiting means.

10 6. The system according to claim 5, wherein the camera control apparatus further comprises storage means for storing limit information concerning the control range of the zoom magnification of the camera corresponding to the prescribed area.

15 7. The system according to claim 5, wherein the limiting means limits an upper limit of the zoom magnification of the camera.

8. The system according to claim 7, wherein said control means controls the zoom magnification to the
20 upper limit of the control range, which has been limited by said limiting means, in a case where the zoom magnification of the camera has exceeded the upper limit of the control range limited by said limiting means.

9. A camera control method for controlling shooting
25 direction and zoom magnification of a camera, comprising:

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an input step of inputting a control command for controlling shooting direction or zoom magnification of the camera;

5 a calculation step of calculating, on the basis of the control command input by said input step, an area to be imaged by the camera;

a limiting step of limiting a control range of the zoom magnification of the camera in a case where the imaging area of the camera calculated by said calculation step overlaps a prescribed area; and

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a control step of controlling the zoom magnification of the camera so as to fall within the control range, which has been limited by said limiting step, in a case where the zoom magnification of the camera exceeds the control range limited by said limiting step.

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10. The method according to claim 9, further comprising a storage step of storing limit information concerning the control range of the zoom magnification of the camera corresponding to the prescribed area.

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11. The method according to claim 9, wherein said limiting step limits an upper limit of the zoom magnification of the camera.

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12. The method according to claim 11, wherein said control step controls the zoom magnification of the camera to the upper limit of the control range, which

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has been limited by said limiting step, in a case where the zoom magnification of the camera has exceeded the upper limit of the control range limited by said limiting step.

- 5 13. A storage medium storing a camera control program for controlling shooting direction and zoom magnification of a camera, wherein the stored program:

calculates, on the basis of a control command for controlling shooting direction or zoom magnification of the camera, an area to be imaged by the camera;

limits a control range of the zoom magnification of the camera in a case where the calculated imaging area of the camera overlaps a prescribed area; and

- 15 controls the zoom magnification of the camera so as to fall within the limited control range in a case where the limited control range is exceeded.

14. The storage medium according to claim 13, wherein the stored control program further stores limit information concerning the control range of the zoom magnification of the camera corresponding to the prescribed area.

15. The storage medium according to claim 13, wherein the stored control program further limits an upper limit of the zoom magnification of the camera.

- 25 16. The storage medium according to claim 15, wherein the stored control program further controls the zoom

magnification of the camera to the upper limit of the control range in a case where the upper limit of the limited control range is exceeded.

5 17. A camera control apparatus for controlling zoom magnification of a camera, comprising:

input means for inputting a control command for controlling zoom magnification of the camera;

10 calculation means for calculating, on the basis of the control command input by said input means, an area to be imaged by the camera;

limiting means for limiting a control range of the zoom magnification of the camera in a case where the imaging area of the camera calculated by said calculation means overlaps a prescribed area; and

15 control means for controlling the zoom magnification of the camera so as to fall within the control range, which has been limited by said limiting means, in a case where the zoom magnification of the camera exceeds the control range limited by said
20 limiting means.

18. A camera control method for controlling zoom magnification of a camera, comprising:

an input step of inputting a control command for controlling zoom magnification of the camera;

25 a calculation step of calculating, on the basis of the control command input by said input step, an area to

be imaged by the camera;

a limiting step of limiting a control range of the zoom magnification of the camera in a case where the imaging area of the camera calculated by said

5 calculation step overlaps a prescribed area; and

a control step of controlling the zoom magnification of the camera so as to fall within the control range, which has been limited by said limiting step, in a case where the zoom magnification of the camera exceeds the control range limited by said
10 limiting step.

19. The system according to claim 5, wherein the network is a LAN or ISDN line.

20. An image pick-up server, which has image sensing
15 means, for performing a distribution service which distributes video information obtained by said image sensing means to a client via a network, comprising:

storage means for setting a plurality of shootable areas, which are the object of the distribution service,
20 within a range in which shooting direction of said image sensing means can be changed, and storing information relating to the plurality of shootable areas set and information which specifies a plurality of virtual image sensing means for respective ones of the shootable
25 areas; and

control means for reading out, from said storage means, information corresponding to virtual image sensing means selectively designated by the client, setting a range in which it is possible to change the shooting direction of said image sensing means based upon the information relating to the shootable area indicated by the information that has been read out, and controlling said image sensing means within the range in which it is possible to change the shooting direction.

21. The server according to claim 20, wherein said storage means stores, with respect to said plurality of shootable areas, identification numbers of respective ones of said virtual image sensing means, and information indicating ranges of pan and tilt angles of said image sensing means.

22. The server according to claim 21, wherein said storage means stores information indicating ranges over which zoom magnification can be changed with respect to said plurality of shootable areas.

23. The server according to claim 20, wherein said control means includes means for inhibiting distribution of video information, which has been obtained by said image sensing means, during changing of the shooting direction of said image sensing means in order to change over the virtual image sensing means.

24. The server according to claim 20, wherein

information relating to the shootable areas is stored in the server.

25. A client connected to the image pick-up server set forth in claim 20, comprising:

5 selection notification means for selecting one of said virtual image sensing means that have been stored in said storage means and notifying said image pick-up server of the information specifying the selected virtual image sensing means;

10 display means for displaying an image distributed by said image pick-up server; and

shooting-direction change designation means for changing the shooting direction of the virtual image sensing means selected by said selection notification
15 means and instructing said server of result of the change.

26. The client according to claim 25, wherein the information relating to the shootable areas is downloaded from said image pick-up server.

20 27. An image pick-up system comprising an image pick-up server, which has image sensing means, for performing a distribution service which distributes video information obtained by the image sensing means to a client via a network, and a client for receiving the video
25 information from said image pick-up server, wherein said image pick-up server includes:

storage means for setting a plurality of shootable areas, which are the object of the distribution service, within a range in which shooting direction of said image sensing means can be changed, and storing information
5 relating to the plurality of shootable areas set and information which specifies a plurality of virtual image sensing means for respective ones of the shootable areas; and

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10 control means for reading out, from said storage means, information corresponding to virtual image sensing means selectively designated by the client, setting a range in which it is possible to change the shooting direction of said image sensing means based upon the information relating to the shootable area
15 indicated by the information that has been read out, and controlling said image sensing means within the range in which it is possible to change the shooting direction; and

said client includes:

20 selection notification means for selecting one of said virtual image sensing means that have been stored in said storage means and notifying said image pick-up server of the information specifying the selected virtual image sensing means;

25 display means for displaying an image distributed by said image pick-up server; and

shooting-direction change designation means for
changing the shooting direction of the virtual image
sensing means selected by said selection notification
means and instructing said server of result of the
5 change.

28. A method of controlling an image pick-up server,
which has image sensing means, for performing a
distribution service which distributes video information
obtained by the image sensing means to a client via a
network, said method comprising:
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a storage step of setting a plurality of shootable
areas, which are the object of the distribution service,
within a range in which shooting direction of said image
sensing means can be changed, and storing, in prescribed
15 storage means, information relating to the plurality of
shootable areas set and information which specifies a
plurality of virtual image sensing means for respective
ones of the shootable areas; and

a control step of reading out, from said storage
20 means, information corresponding to virtual image
sensing means selectively designated by the client,
setting a range in which it is possible to change the
shooting direction of said image sensing means based
upon the information relating to the shootable area
25 indicated by the information that has been read out, and
controlling said image sensing means within the range in

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which it is possible to change the shooting direction.

29. A storage medium storing program code which, by being read in and executed by a computer, functions as an image pick-up server, which has image sensing means, for performing a distribution service which distributes video information obtained by the image sensing means to a client via a network, said storage medium storing program code which functions as:

storage means for setting a plurality of shootable areas, which are the object of the distribution service, within a range in which shooting direction of said image sensing means can be changed, and storing information relating to the plurality of shootable areas set and information which specifies a plurality of virtual image sensing means for respective ones of the shootable areas; and

control means for reading out, from said storage means, information corresponding to virtual image sensing means selectively designated by the client, setting a range in which it is possible to change the shooting direction of said image sensing means based upon the information relating to the shootable area indicated by the information that has been read out, and controlling said image sensing means within the range in which it is possible to change the shooting direction.